Customer No.: 31561
Docket No.: 13869-US-PA
Application No.: 10/711,838

AMENDMENT

To the Claims:

Claim 1. (previously presented) An etching process, comprising:

providing a material layer having a bottom anti-reflection coating (BARC) and a patterned photoresist layer thereon;

etching the BARC using the patterned photoresist layer as a mask, wherein polymer as an etching by-product is formed on the patterned photoresist layer;

performing a cleaning step to remove the polymer from the patterned photoresist layer; and

etching the material layer using the patterned photoresist layer as a mask, wherein the cleaning step is performed before the step of etching the material layer.

Claim 2. (original) The etching process of claim 1, wherein the cleaning step comprises using an ionized gas to remove the polymer from the patterned photoresist layer.

Claim 3. (original) The etching process of claim 2, wherein the ionized gas has a higher etching rate to the polymer than to the material layer.

Claim 4. (original) The etching process of claim 1, wherein the material layer comprises a polysilicon layer.

Claim 5. (original) The etching process of claim 4, wherein the ionized gas contains fluorine ions, oxygen ions, or a combination thereof.

Claim 6. (original) The etching process of claim 1, wherein the BARC comprises an inorganic material.

Claim 7. (original) The etching process of claim 1, wherein the BARC comprises an organic material.

Claim 8. (original) The etching process of claim 1, further comprising trimming the patterned photoresist layer after the material layer is provided.

Claim 9. (previously presented) A patterning process, comprising:

sequentially forming a bottom anti-reflection coating (BARC) and a photoresist layer on a material layer;

performing a lithography process to pattern the photoresist layer;

trimming the patterned photoresist layer;

etching the BARC using the patterned photoresist layer as a mask, wherein polymer as an etching by-product is formed on the patterned photoresist layer;

performing a cleaning step to remove the polymer from the patterned photoresist layer; and

etching the material layer using the patterned photoresist layer as a mask, wherein the cleaning step is performed before the step of etching the material layer,

wherein the step of etching the BARC, the cleaning step and the step of etching the material layer are performed in-situ.

Claim 10. (previously presented) The patterning process of claim 9, wherein the cleaning step comprises using an ionized gas to remove the polymer from the patterned photoresist layer.

Claim 11. (previously presented) The patterning process of claim 10, wherein the ionized gas has a higher etching rate to the polymer than to the material layer.

Claim 12. (previously presented) The patterning process of claim 9, wherein the material layer comprises a polysilicon layer.

Claim 13. (previously presented) The patterning process of claim 12, wherein the ionized gas contains fluorine ions, oxygen ions, or a combination thereof.

Claim 14. (previously presented) The patterning process of claim 9, wherein the BARC comprises an inorganic material.

Claim 15. (previously presented) The patterning process of claim 9, wherein the BARC comprises an organic material.